

Principles of Biomechanics vs Sport
Text p231-234

Principle #1

Stability of an athlete is dependent upon the athlete's Center of Mass (C of M)

To increase stability an athlete can;

- Lower his/her C of M
- Create a larger base of support
- Center C of M within the Base of Support
- Increase Mass

Nov 23-7:16 AM

Application of this Principle

- Gymnastics - tripod for headstand
- Football- running back lowers his/her C of M while clearing the line of scrimmage
- Football- three point stance
- Cheerleading Base of the Pyramid
- Self Defense- properties of the *throws*
- Hockey -Hip-Check (Body Checking)

Nov 23-7:22 AM

Assignment

Create notes outlining each of the principles 2-6
Create 4 or 5 points of reference
5 applications to sport
(be clear and descriptive when outlining how each principle applies to various sports)

Nov 23-7:28 AM

Principle #6

Angular Motion is produced by the application of a force acting at some distance from an axis that is, Torque.

Athletes are concerned with three kinds of rotations produced through torque.

- Rotation of their entire body
- Rotation of individual body segments
- Rotation of projectiles

In order to create a spin, hit the object off the center of gravity(Mass)
By manipulating your body you can force an object in certain directions ie. spinning a body or a ball

Application

Baseball -performing a curve ball by putting your hand on the ball to manipulate the center of mass

Nov 23-7:32 AM

Pool- Hitting the ball at the the bottom of the cue ball to create backspin (any strike off the center of mass will perform a different action)

Nov 23-8:17 AM

Principle #7

Angular Momentum is constant when an athlete or object is free in the air.

- increase force exerted on ground/surface
- decrease the length of moment arm to increase momentum
- the surface one initiates the force on has a factor in the height and/or speed of the object ie. jumping off a solid surface or jumping off a diving board

Applications

Diving- divers can get into a tuck position to spin faster and straighten upon entry into the water

Gymnastics- a vaulter in gymnastics exerts a lot of force backwards which allows them to spin very rapidly throughout a maneuver

Nov 23-8:19 AM

Assignment
7 Principles of Biomechanics vs Sport
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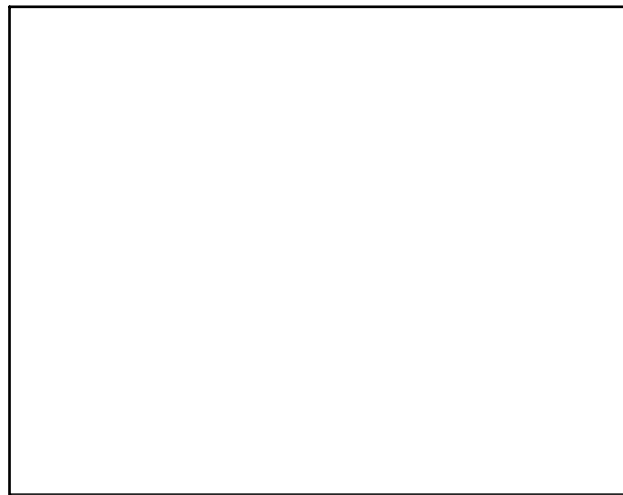
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Nov 25-12:47 PM



Nov 23-12:25 PM